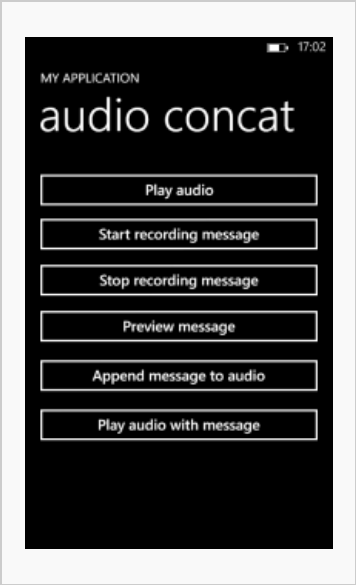
Audio concatenation in Windows Phone (Arabic)

المقدمة

في هذا المثال سنقوم بتسجيل رسالة صوتية من خلال ميكروفون الجهاز وسيتم إلحاق هذه الرسالة في نهاية أحدي المسارات الصوتية. وسيتم حفظ الرسالة الصوتية والمسار الصوتي علي شكل WAV

- وسوف نتابع الخطوات:
- تشغيل المسار الصوتي من مجلد التطبيق الجهاز
- الرسالة الصوتية سجل باستخدام ميكروفون الجهاز
- معاينة الرسالة الصوتية المسجلة
- إلحاق الرسالة الصوتية المسجلة في نهاية المسار الصوتي
- تشغيل المسار النهائي مع رسالة



واجهة المستخدم

الخطوات

نشئ تطبيق ويندوز فون جديد

أضف عناصر التحكم التالية إلي واجهة التطبيق

This application has a collection of Button and a MediaElement. In the project, double-click the **MainPage.xaml** file and add the below code in root element.

```
<Grid x:Name="ContentPanel" Grid.Row="1" Margin="12,0,12,0">
            <Button Content="Start recording message" HorizontalAlignment="Left"
Margin="0,79,0,0" VerticalAlignment="Top" Width="456" Click="Button_Click_2"/>
            <Button Content="Stop recording message" HorizontalAlignment="Left"
Margin="0,151,0,0" VerticalAlignment="Top" Width="456" Click="Button_Click_3"/>
            <Button Content="Preview message" HorizontalAlignment="Left"
Margin="0,223,0,0" VerticalAlignment="Top" Width="456" Click="Button_Click_4"/>
            <Button Content="Append message to audio" HorizontalAlignment="Left"
Margin="0,300,0,0" VerticalAlignment="Top" RenderTransformOrigin="-0.215,0.276"
Width="456" Click="Button_Click_5"/>
            <Button Content="Play audio with message" HorizontalAlignment="Left"
Margin="0,377,0,0" VerticalAlignment="Top" RenderTransformOrigin="0.463,0.52"
Width="456" Click="Button_Click_6"/>
            <MediaElement Name="MediaPlayer" HorizontalAlignment="Left" Height="0"
Margin="10,454,0,0" VerticalAlignment="Top" Width="0"/>
```


(C) Copyright Nokia 2014. All rights reserved.

```
</Grid>
            <Button Content="Play audio" HorizontalAlignment="Left" Margin="12,10,0,0"
Grid.Row="1" VerticalAlignment="Top" RenderTransformOrigin="0.345,0.1" Width="456"
Click="Button_Click_1"/>
```

Adding references

- Open the **MainPage.xaml.cs** file and add the following using statements:

```
using System.Windows.Threading;
using Microsoft.Xna.Framework.Audio;
using System.IO;
using Microsoft.Xna.Framework;
using System.IO.IsolatedStorage;
using System.Threading;
using Microsoft.Xna.Framework.Media.PhoneExtensions;
using Microsoft.Xna.Framework.Media;
```

- Add the following declarations to the `MainPage` class:

```
        private Microphone microphone = Microphone.Default;
        private byte[] buffer;
        private MemoryStream stream = new MemoryStream();
        private SoundEffectInstance soundInstance;
        private bool soundIsPlaying = false;
        public byte[] byteArrayMessage { get; set; }
        public byte[] byteArrayAudio { get; set; }
        public byte[] ConcatMessage { get; set; }
```

- Add the following initialization in the `MainPage` constructor:

```
public MainPage()
        {
            InitializeComponent();
            microphone.BufferReady += new
EventHandler<EventArgs>(microphone_BufferReady);
            DispatcherTimer dt = new DispatcherTimer();
            dt.Interval = TimeSpan.FromMilliseconds(33);
            dt.Tick += new EventHandler(dt_Tick);
            dt.Start();
        }
```

- Add the following `dt_Tick` and `microphone_BufferReady` method to the `MainPage` class:

```
void dt_Tick(object sender, EventArgs e)
        {
            try { FrameworkDispatcher.Update(); }
            catch { }
            if (true == soundIsPlaying)
            {
                if (soundInstance.State != SoundState.Playing)
                {
                  soundIsPlaying = false;
                 }
```


(C) Copyright Nokia 2014. All rights reserved.

```
            }
        }
void microphone_BufferReady(object sender, EventArgs e)
        {
            microphone.GetData(buffer);
            stream.Write(buffer, 0, buffer.Length);
        }
```

`microphone_BufferReady` get the microphone buffer and writes to stream.

- Add the following code inside a `Button` event to record the voice message using microphone.

```
//record message
        private void Button_Click_2(object sender, RoutedEventArgs e)
        {
            // Get audio data in 1/2 second chunks
            microphone.BufferDuration = TimeSpan.FromMilliseconds(500);
            // Allocate memory to hold the audio data
            buffer = new
byte[microphone.GetSampleSizeInBytes(microphone.BufferDuration)];
            // Set the stream back to zero in case there is already something in it
            stream.SetLength(0);
            WriteWavHeader(stream, microphone.SampleRate);
            // Start recording
            microphone.Start();
        }
```

`WriteWavHeader` method defines the header structure of the recorded message.

- Add the following code to concat the recorded message at the end of the audio track

```
private void Button_Click_5(object sender, RoutedEventArgs e)
        {
            byteArrayMessage = stream.ToArray(); // get recorded stream into byte array
            //get audio into byte array
            Stream input = new MemoryStream();
            input = App.GetResourceStream(new
Uri("/AudioConcat;component/Audio/musicsample.wav", UriKind.RelativeOrAbsolute)).Stream;
            byteArrayAudio = ReadToEnd(input);
            ConcatMessage = new byte[byteArrayAudio.Length + byteArrayMessage.Length];
            System.Buffer.BlockCopy(byteArrayAudio, 0, ConcatMessage, 0,
byteArrayAudio.Length);
            System.Buffer.BlockCopy(byteArrayMessage, 0, ConcatMessage,
byteArrayAudio.Length, byteArrayMessage.Length);
            MessageBox.Show("Process completed!");
          }
```

`ReadToEnd` method converts stream to byte array.

- Add the following code to play the final track with the recorded message

```
private void Button_Click_6(object sender, RoutedEventArgs e)
        {
            SoundEffect sound = new SoundEffect(ConcatMessage, microphone.SampleRate,
AudioChannels.Mono);
            soundInstance = sound.CreateInstance();
```


(C) Copyright Nokia 2014. All rights reserved.

```
            soundIsPlaying = true;
            soundInstance.Play();
        }
```

الملخص

لتشغيل هذا المثال مع ملفات صوتية أخري تأكد معاينه معدل الصوت لهذا الملف و الرساله المسجلة يجب ان تكون بنفس المعدل و المستوي حتي تحصل على نتائج مرضية .

الكود المصدري

- لتحميل الكود المصدري لذها المثال أنقر هنا : File:AudioConcat.zip

(C) Copyright Nokia 2014. All rights reserved.